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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,934	03/26/2004	Fredrik Orava	137.1024CIP	1906
33369 7590 09/27/2007 FASTH LAW OFFICES (ROLF FASTH) 26 PINECREST PLAZA, SUITE 2 SOUTHERN PINES, NC 28387-4301			EXAMINER SOL, ANTHONY M	
			ART UNIT 2616	PAPER NUMBER
			MAIL DATE 09/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/810,934

Applicant(s)

ORAVA ET AL.

Examiner

Anthony Sol

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitations "the second uplink" and "the first sister node" in lines 2-3. There are insufficient antecedent basis for these limitation in the claim.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,149,216 B1 ("Cheriton") in view of Pub. No. US 2006/0050690 A1 ("Epps").

Regarding claim 1,

Cheriton shows in fig. 2 providing a first node, the first inferior node 210 on the

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left, having a first access port 131 (fig. 1), a second access port 131 and a first uplink 1 connected to a router 205, providing a second node, the first terminal leaf 210 on the left, having a first access port 131 and a first uplink 1, the first uplink 1 of the second node being connected to the first access port 131 of the first node, providing a third node 215 having a first access port 131 and a first uplink 256, the first uplink 256 of the third node 215 being connected to the second access port 131 of the first node 210, sending a first packet via the first access port 131 to the second node, the second node, the first terminal leaf on the left, sending the first packet via the first uplink 1 of the second node to the first access port 131 of the first node, the first inferior node on the left, the first node receiving the first packet via the first access port 131 of the first node, and the first node sending the first packet via the first uplink 1 of the first node to a first router 205.

Note that an objective of Cheriton is to expand on the TRIE data structure, which is limited to processing the destination IP address to single out other aspects of the packet header such as port numbers (Cheriton, col. 1, lines 34-38 and col. 4, lines 5-10).

Cheriton does not explicitly disclose the second node adding a tag with a first port number to the first packet and also does not disclose the first node adding a first port number of the first access port of the first node to the tag.

Epps shows in fig. 23, the process whereby TAG information is inserted by the gather stage (claimed adding a tag)(para. 48).

Epps discloses that in a TAG swap operation, a 20 bit label is read from the TAG leaf 2310 and concatenated with the remainder of the incoming TAG (claimed adding a first port number to the tag)(para. 281).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton which is based on a well known ordered tree data structure using parent and child nodes to use MPLS switching, also known as tag switching (Epps, para. 63), to insert tags and concatenate with the incoming tag information, as taught by Epps. One skilled in the art would have been motivated to make the combination since the M-trie Plus engine 133 extracts the data field from the packet 121 specified by the current node opcode. The opcodes in the oppointer (that is, the 10 bit opcode 230) can refer to any portion of the packet flow label (Cheriton, col. 6, lines 36-43) and since TRIE--as used herein, the term "TRIE" includes data structures that store elements in a tree, including roots, leaves and branches. The path from the root to the leaf is described by a key. Flow label--as used here, the term "flow label" describes the collection of fields used to identify and classify fields in the packet header, including, without limitation IP source address, destination address, protocol type and layer 4 **port numbers** (Cheriton, col. 4, lines 5-9).

Regarding claims 5 and 6,

Cheriton discloses using M-trie packet processing to single out header information such as port numbers (Cheriton, col. 4, lines 5-9) in tags (col. 3, lines 13-20).

Cheriton does not explicitly disclose providing the tag of the first packet with a first nibble containing the port number of a previous node and a second nibble, the first node adding the first port number of the first node to the second nibble.

Epps discloses MPLS/Tag switching as discussed above regarding claim 1 in which pushing/popping of MPLS labels are performed (para. 73), wherein nibbles are read (para. 156).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton which is based on a well known ordered tree data structure using parent and child nodes to use MPLS switching, also known as tag switching (Epps, para. 63), to insert tags and concatenate with the incoming tag information using nibbles, as taught by Epps. One skilled in the art would have been motivated to make the combination because a nibble operation allows a fast label swap (para. 281).

Regarding claims 7, 8, and 9,

The subject matter of claims 7, 8, and 9 is simply a packet being sent in the egress direction verses the ingress direction concerned with in claims 1-6. It would be obvious to one of ordinary skill in the art to reverse the process of the ingress direction as discussed above in regards to the rejections of claims 1-6 as suggested by Cheriton

when he states that although the preferred embodiments of data stream 120 is a unidirectional stream, other embodiments may be bi-directional (col. 4, lines 47-53).

Regarding claim 10,

Cheriton shows in fig. 2 a tree topology of nodes connected to one another.

5. Claims 2-4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Cheriton in view of Epps, and further in view of U.S. Patent No. 5,859,959 ("Kimball").

Regarding claim 2,

Cheriton and Epps do not disclose providing the first node with a second uplink connected to a sister node that is identical to the first node.

Kimball shows in fig. 1, node 2a that has a second uplink to node 2b.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton to have a second uplink for a node connected to a sister node as taught by Kimball. One skilled in the art would have been motivated to make the combination to provide redundant links within the same domain as proposed by a standard (Kimball, col. 2, lines 36-38).

Regarding claim 3,

Cheriton and Epps do not disclose the first node sending the first packet via the second uplink to the first sister node.

Kimball shows in fig. 1, node 2a sending a packet via a second uplink to node 2b.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton to have a second uplink for a node sending a packet to a sister node as taught by Kimball. One skilled in the art would have been motivated to make the combination to provide redundant links within the same domain as proposed by a standard (Kimball, col. 2, lines 36-38).

Regarding claim 4,

Cheriton and Epps do not disclose sending the first packet via a first uplink of the first sister node to a second router.

Kimball shows in fig. 1, the first sister node 54 sending the first packet via a first uplink B of the first sister node 54 to a second router 61.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton to send the first packet via a first uplink of the first sister node to a second router as taught by Kimball. One skilled in the art would have been motivated to make the combination to provide redundancy (Kimball, col. 4, lines 37-44).

Regarding claim 11,



Cheriton and Epps do not disclose forming a ring topology of nodes connected to one another.

Kimball shows in fig. 4, a ring topology of nodes for nodes 1, 2a, 2b and 2c.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the m-trie based packet processing system of Cheriton to form a ring topology as taught by Kimball. One skilled in the art would have been motivated to make the combination to provide redundancy.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Venkataraman (US5,802,052) teaches multistage switching.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
WING CHAN  
SUPERVISORY PATENT EXAMINER  
9/20/07

AMS

9/20/2007